Claim Listing

1-10. (canceled)

11. (new) A method of coating a paper/board web with a plane-fed curtain coater, comprising the steps of:

feeding at least one layer of a coating material from at least one feed chamber through a nozzle feed slot onto a flow plane established by a cross machine direction extending nozzle beam;

flowing the at least one layer of coating material in a machine direction along the flow plane;

determining a cross machine direction thickness profile downstream of the nozzle feed slot of said at least one coating material layer on top of the flow plane; and

controlling on the basis of the cross machine direction thickness profile, a feed rate of the coating material from the feed chamber to the feed slot to achieve a selected cross machine direction thickness profile for said at least one coating material layer.

12. (new) The method of claim 11, wherein the step of feeding includes feeding a plurality of superpositioned coating layers on to the flow plane, each layer supplied with a coating from a feed chamber through a nozzle feed slot, the plurality of superpositioned coating layers forming a total coating layer; and wherein the step of determining a cross machine direction thickness profile downstream of the nozzle feed slot of said at least one coating material layer on top of the flow plane includes determining a cross machine direction thickness profile of each coating layer; and wherein the step of controlling on the basis of the cross machine direction thickness profile, a feed rate of the coating material from the feed chamber to the feed slot includes controlling on the basis of each cross machine direction thickness profile, a feed rate of each coating material from each feed chamber to each feed slot to achieve a selected cross machine direction thickness profile for said total coating layer.

13. (new) The method of claim 11 wherein the step of controlling on the basis of the cross machine direction thickness profile, further comprises increasing or decreasing a by-pass flow of the coating material through the feed chamber.

14. (new) The method of claim 11, wherein the step of determining the cross machine direction thickness profile is accomplished with at least one sensor making a non-contact measurements of thickness.

15. (new) The method of claim 14, wherein said at least one sensor is moved in a cross machine direction along the nozzle beam, such that the cross machine direction thickness profile is conductible with said sensor essentially across the entire width of the web.

16. (new) The method of claim 11, wherein the step of determining the cross machine direction thickness profile is accomplished by measuring a surface speed of the at least one layer of coating material as it flows in the machine direction along the flow plane.

17. (new) The method of claim 11, wherein the step of controlling on the basis of the cross machine direction thickness profile, the feed rate of the coating material from the feed chamber to the feed slot to achieve a selected cross machine direction thickness profile for said at least one coating material layer, further comprises:

manipulating an element disposed in each of a plurality of cross machine direction arrayed feed holes which communicate between said at least one feed chamber and the nozzle slot whereby the effective area of the feed holes is adjusted so that the at least one layer of the coating material achieves the selected cross machine direction thickness profile for said at least one coating material layer.

18. (new) The method of claim 17, wherein the coating material flowing between said at least one feed chamber and the nozzle slot flows through at least one equalizing chamber, which extends in the cross machine direction and into which equalizing chamber the feed holes open.

19. (new) A method of coating a paper/board web with a plane-fed curtain coater, comprising a cross machine direction extending nozzle beam provided with at least a first feed chamber and a first nozzle feed slot connected to the first feed chamber, and a second feed chamber and a second nozzle feed slot connected to the second feed chamber, comprising the steps of:

feeding a first layer of first coating material from the first nozzle feed slot on top of a flow plane defined by the nozzle beam, and flowing the first layer in a machine direction along the flow plane;

feeding a second layer of second coating material from the second nozzle feed slot on top of the flow plane defined by the nozzle beam, and flowing the second layer in the machine direction along the flow plane;

determining a cross machine direction thickness profile of at least one of the first layer of coating material or the second layer of coating material, on top of the flow

plane downstream of the first nozzle feed slot, or the second nozzle feed slot respectively; and

controlling a first feed rate of the first coating material from the first feed chamber to the first nozzle feed slot, or controlling a second feed rate of the second coating material from the second feed chamber to the second nozzle feed slot, on the basis of the determined cross machine direction thickness profile of respectively the first layer of coating material or the second layer of coating material, to achieve a selected cross machine direction thickness profile for said at least one of the first layer of coating material or the second layer of coating material.

20. (new) The method of claim 19 wherein the step of controlling on the basis of the determined cross machine direction thickness profile of the first layer of coating material or the second layer of coating material, further comprises increasing or decreasing a by-pass flow of the coating material through the first feed chamber or the second feed chamber.

21. (new) The method of claim 19 wherein the step of determining a cross machine direction thickness profile of at least one of the first layer of coating material or the second layer of coating material is accomplished with at least one sensor making non-contact measurements of thickness.

22. (new) The method of claim 21 wherein said at least one sensor is moved in a cross machine direction along the nozzle beam, such that the cross machine direction thickness profile is conductible with said sensor essentially across the entire width of the web.

23. (new) The method of claim 19, wherein the step of determining the cross machine direction thickness profile is accomplished by measuring a surface speed of the first layer of coating material or the second layer of coating material, as it flows in the machine direction along the flow plane.

24. (new) A plane-fed curtain coater, comprising:

a nozzle beam extending in a cross machine direction, having a flow plane defined by the nozzle beam, and having portions defining at least a first feed chamber and a first nozzle feed slot connected to the first feed chamber, and a second feed chamber and a second nozzle feed slot connected to the second feed chamber;

a web positioned below the nozzle beam in coating receiving relation, the web arranged to travel in a machine direction below the nozzle beam, wherein the web defines a width in the cross machine direction, and wherein the first nozzle feed slot and the second nozzle feed slot extend at least across the defined width in the cross machine direction;

a measuring element positioned above the flow plane defined by the nozzle beam, the measuring element of a type for determining a thickness profile, the measuring element arranged for measuring a cross machine direction thickness profile of at least one coating material layer on top of the flow plane across a width corresponding to the entire width of the web;

a plurality of regulating elements positioned between the first nozzle feed chamber and the first nozzle feed slot, or between the second feed chamber and the second nozzle feed slot, and arranged for regulating a feed rate of a coating material between respectively the first feed chamber, and the first nozzle feed slot, or between the second feed chamber and the second flow nozzle feed slot, wherein the measuring element is in data transmitting relation to apparatus arranged in controlling relation to the regulating elements.

25. (new) The plane-fed curtain coater of claim 24, wherein said measuring element is a sensor mounted for movement in a cross machine direction along the nozzle beam, such that a cross machine direction thickness profile is conducted when said sensor moves essentially across the entire width of the web.

26. (new) The plane-fed curtain coater of claim 24, wherein said measuring element comprises a plurality of sensors mounted spaced apart in the cross machine direction and positioned over the nozzle beam.

27. (new) The plane-fed curtain coater of claim 24, wherein said measuring element is a sensor of a type that is arranged to measure a surface speed of a flowing layer of coating.

28. (new) The plane-fed curtain coater of claim 24, wherein said measuring element is a sensor of a type that is arranged to measure a surface speed in a non-contact way based on laser technology.